Nuytsia
The journal of the Western Australian Herbarium
31: 15–18
Published online 29 January 2020

Dancing Lechenaultia (*Lechenaultia orchestris*, Goodeniaceae), a new species with horticultural potential from southern Western Australia

Kelly A. Shepherd[1] and Michael Hislop

Western Australian Herbarium, Biodiversity and Conservation Science,
Department of Biodiversity, Conservation and Attractions,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
[1]Corresponding author, email: Kelly.Shepherd@dbca.wa.gov.au

SHORT COMMUNICATION

Lechenaultia R.Br. (Goodeniaceae) is a charismatic genus of 29 formally named species, of which all but one occur in Western Australia (Western Australian Herbarium 1998–; CHAH 2006). Many produce showy flowers in striking shades of blue, red, orange or yellow making them a popular choice for native gardens. Indeed, the genus has a long horticultural history, first appearing in the glasshouses of Victorian England with the introduction of *L. formosa* R.Br. to the United Kingdom in 1824 (Step 1897). Even Charles Darwin was fascinated by *Lechenaultia*, conducting experiments over successive years to understand the pollination mechanism of the unusual cup-like indusium that distinguishes the family Goodeniaceae (Darwin 1861, 1871). Unfortunately, while some species are well known in cultivation many are scarce in the wild, with *L. chlorantha* F.Muell. listed as Endangered, *L. laricina* Lindl. as Vulnerable, and a further 11 otherwise considered rare or poorly known (Western Australian Herbarium 1998–; Smith & Jones 2018). The new species described below is one such plant—discovered by William Archer in the Mallee bioregion of southern Western Australia in 2012, only three populations occurring in close proximity have been discovered to date. This species also has horticultural potential as it produces highly attractive, mauve-blue flowers that fancifully resemble a flamenco dancer.

Lechenaultia orchestris K.A.Sheph. & Hislop, *sp. nov.*

Type: West of Lake Tay, Western Australia [precise locality withheld for conservation reasons], 7 November 2017, *K.A. Shepherd & J.A. Wege* KS 1667 (*holo*: PERTH 08984859; *iso*: AD, CANB, MEL).

Lechenaultia sp. Cascade (W. Archer 212122), Western Australian Herbarium, in *FloraBase*, https://florabase.dpaw.wa.gov.au/ [accessed 27 February 2019].

Erect to spreading *herb* or *subshrub*, to 30 cm high; stems glabrous. *Bark* pale grey. *Leaves* alternate, crowded on lower stems, becoming longer and more scattered towards inflorescence, erect to patent, linear to narrowly oblong with an indistinct petiole, 2.5–8.5 mm long, 0.6–1.5 mm wide, entire, obtuse to subacute, glabrous or scarcely papillose, distinctly keeled abaxially. *Inflorescences* open, terminal,

https://florabase.dpaw.wa.gov.au/nuytsia/
ISSN 2200-2790 (Online)
ISSN 0085-4417 (Print)

monochasial cymes with 1–3 flowers; bracts not differentiated from upper leaves. *Sepals* linear to very narrowly lanceolate, subequal, 5.8–9.8 mm long, 0.5–1.2 mm wide, acuminate, glabrous. *Corolla* 19–28 mm long, mauve-blue, white in throat with dark lavender lines towards the base, slit to the base adaxially; outer surface glabrous, inner surface with a dense indumentum of broad, obtuse, septate hairs 0.1–0.4 mm long in the throat and near the base of the lobe margins, glabrous elsewhere; lobes similar in length, wings subequal; adaxial lobes held erect, twisted at the base and incurved, 10.5–13.5 mm long, 1–2.3 mm wide, wings 6–14 mm long, 2.8–4 mm wide; abaxial lobes 11.3–14.6 mm long, 1.6–2.5 mm wide, wings 11.2–13.8 mm long, 3.6–5.1 mm wide; margins entire. *Stamen* filaments 6.8–7.4 mm long, 0.2–0.5 mm wide; anthers 2.2–2.8 mm long, 0.2–0.8 mm wide. *Style* 15–19 mm long, glabrous or with sparse glandular hairs 0.1–0.2 mm long; indusium 1.8–2.5 mm wide, with a dense tuft of hairs 0.1–0.2 mm long (of the same type as in the throat), lips with short bristles 0.1 mm long. *Ovary* 8–21 mm long, linear, glabrous. *Fruit* not seen. (Figure 1B–D)

Diagnostic features. Within sect. *Patentes* D.A.Morrison, *L. orchestris* is distinguished by its long style (15–19 mm long), long ovary (8–21 mm long), short corolla throat hairs (0.1–0.4 mm long) and erect, incurved adaxial corolla lobes.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 11 Nov. 2012, *W. Archer* 1111126 (PERTH); 2 Dec. 2012, *W. Archer* 212122 (PERTH); 8 Oct. 2013, *W. Archer* 810131 (PERTH).

Phenology. Flowering in late spring to early summer, from October to December.

Distribution and habitat. *Lechenaultia orchestris* is only known from three populations distributed over a linear distance of *c.* 3 km in the Mallee bioregion, north of Cascade. This species is found in low *Eucalyptus* woodland over myrtaceous heath with *Acacia*, *Petrophile*, *Hakea* and *Dampiera* in deep white or yellow sand (Figure 1A).

Conservation status. Recently listed as Priority One under Conservation Codes for Western Australian Flora (Western Australian Herbarium 1998–), under *L.* sp. Cascade (W.R. Archer 212122). This species remains poorly known and while 50–100 plants were observed at one site (*W.R. Archer* 212122), it appears to occupy a relatively small area. Further targeted surveys in similar habitats throughout the district are required to determine if it is more widespread.

Etymology. The epithet is from the Greek *orchestris* (a dancer): the upper (adaxial) lobes of the flower are erect and incurved and are reminiscent of a flamenco dancer with arms upraised (Figure 1B).

Vernacular name. Dancing Lechenaultia.

Affinities. A corolla tube split to the base on the adaxial side and well-developed wings on the adaxial lobes place the new species in sect. *Patentes*. Within this section, those species with the strongest similarity to *L. orchestris* are *L. biloba* Lindl., *L. galactites* L.W.Sage and especially *L. stenosepala* E.Pritz.

From *L. biloba* and *L. galactites* the new species is distinguished by its much longer style (15–19 mm long vs 5–9 mm long) and noticeably shorter hairs in the corolla throat (0.1–0.4 mm long vs 0.4–1 mm long).

Figure 1. *Lechenaultia orchestris*. A – habitat; B – habit, showing the crowded linear leaves and large mauve-blue flowers; C – flowers, showing the markedly incurved adaxial petals and the white throat of the corolla with dark lavender lines; D – corolla viewed from above showing the short hairs in the throat and the narrow sepals. *Lechenaultia stenosepala*. E – habit; F – flowers, highlighting the almost fan-like form. Images from *K.A. Shepherd & J.A. Wege* KS 1667 (A–D). Photographs by J.A. Wege (A), K.A. Shepherd (B–D) and J. Keeble (E, F).

Lechenaultia stenosepala (Figure 1E, F) has a style length that is within the range of *L. orchestris* and a similarly short indumentum in the corolla throat; however, it usually has larger leaves (7.5–13 mm long vs mostly 2.5–5 mm in *L. orchestris*, reaching up to 8.5 mm only in the upper stems below the inflorescence) and smaller flowers (13–19 mm long vs 19–28 mm). *Lechenaultia orchestris* also has flowers that are an eye-catching mauve-blue, whereas the flowers of *L. stenosepala* vary between white and very pale blue. Perhaps the most striking difference is the orientation of the two adaxial (upper) corolla lobes: in *L. stenosepala* they are widely spread and held close to the abaxial lobes giving a fan-like appearance to the flowers (Figure 1F) whereas in *L. orchestris* they are erect, twisted at their base and incurved (Figure 1C). *Lechenaultia stenosepala* occurs north of Perth, mostly in the Geraldton Sandplains bioregion and northern parts of the Swan Coastal Plain bioregion, and hence the two species have widely allopatric distributions.

Another member of sect. *Patentes*, *L. papillata* D.A.Morrison, is also widely distributed in the Mallee bioregion. It is easily distinguished from *L. orchestris* by the distinctly papillose surface of its leaves, ovary and sepals, and its smaller flowers (11–14 mm long vs 19–28 mm) with longer hairs in the base of the throat and on the margins of the wings.

Acknowledgements

This species was discovered by horticulturalist and naturalist William Archer of Mount Merivale, whose unsurpassed knowledge of, and passion for, the flora of the botanically rich central south coast of Western Australia and its hinterland has led him to discover many new plant species over several decades of exploration. We thank him for bringing this plant to our attention as a probable new species. Jolanda Keeble is gratefully acknowledged for supplying images of *L. stenosepala*. Juliet Wege is also thanked for her support in the field and her astute editorial comments that helped to improve this paper. This research was supported by a Science Project Support Grant from Biodiversity and Conservation Science (DBCA).

References

CHAH (Council of Heads of Australasian Herbaria) (2006). *Australian Plant Census*. https://id.biodiversity.org.au/instance/apni/614462 [accessed 1 April 2018].

Darwin, C. (1861). Cross-breeding in plants—fertilisation of *Leschenaultia formosa*. *Journal of Horticulture and Cottage Gardener* 10: 151.

Darwin, C.R. (1871). On the fertilization of *Leschenaultia*. *Gardeners' Chronicle and Agricultural Gazette* 26: 1166.

Smith, M.G. & Jones, A. (2018). *Threatened and Priority Flora List, 5 December 2018*. Department of Biodiversity, Conservation and Attractions. https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants [accessed 27 February 2019].

Step, E. (1897). *Favourite flowers of garden and greenhouse V. 2*. (London and New York: Frederick Warne & Co.)

Western Australian Herbarium (1998–). *FloraBase—the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. https://florabase.dpaw.wa.gov.au/ [accessed 27 February 2019].